**TRANSMITTAL OF APPEAL BRIEF (Large Entity)**Docket No. **ITL.0506US**In Re Application Of: **Larry H. Gass, et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/922,041	August 3, 2001	Minh Dieu T. Nguyen	21906	2137	7270

Invention: **Firmware Security Key Upgrade Algorithm**COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on  
**September 26, 2006**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:

Larry H. Gass, et al.

Serial No.: 09/922,041

Filed: August 3, 2001

For: Firmware Security Key Upgrade  
Algorithm

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Art Unit: 2137

Examiner: Minh Dieu T. Nguyen

Atty Docket: ITL.0506US  
(P10475)

Assignee: Intel Corporation

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**APPEAL BRIEF**

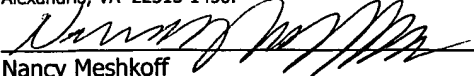
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### **REAL PARTY IN INTEREST**

The real party in interest is the assignee Intel Corporation.

**RELATED APPEALS AND INTERFERENCES**

None.

## **STATUS OF CLAIMS**

Claims 1, 3-7, 27, 29, and 32-42 (Rejected).

Claims 2, 8-26, 28, and 30-31 (Canceled).

Claims 1, 3-7, 27, 29, and 32-42 are rejected and are the subject of this Appeal

Brief.

## **STATUS OF AMENDMENTS**

All amendments have been entered.

## SUMMARY OF CLAIMED SUBJECT MATTER

In the following discussion, the independent claims are read on one of many possible embodiments without limiting the claims:

1. A method comprising:
  - identifying (Fig. 3, 304) a firmware upgrade request by a firmware program (specification, page 9, lines 11-17);
  - retrieving a file signed with a private key (Fig. 3, 314; specification, page 9, lines 18-24);
  - validating the file with a public key (Fig. 3, 316; specification, page 9, lines 25-27);
  - upgrading a portion of the firmware program by the firmware program (Fig. 3, 322; specification, page 10, lines 6-10);
  - locking a device storing the firmware program such that a second portion of the firmware program is not readable (Fig. 3, 308; specification, page 8, line 25-page 9, line 2);
  - validating the public key (Fig. 3, 316; specification, page 9, lines 18-22); and
  - retrieving a second public key from the firmware program if the public key is not valid (Fig. 3, 318; specification, page 9, lines 23-24).

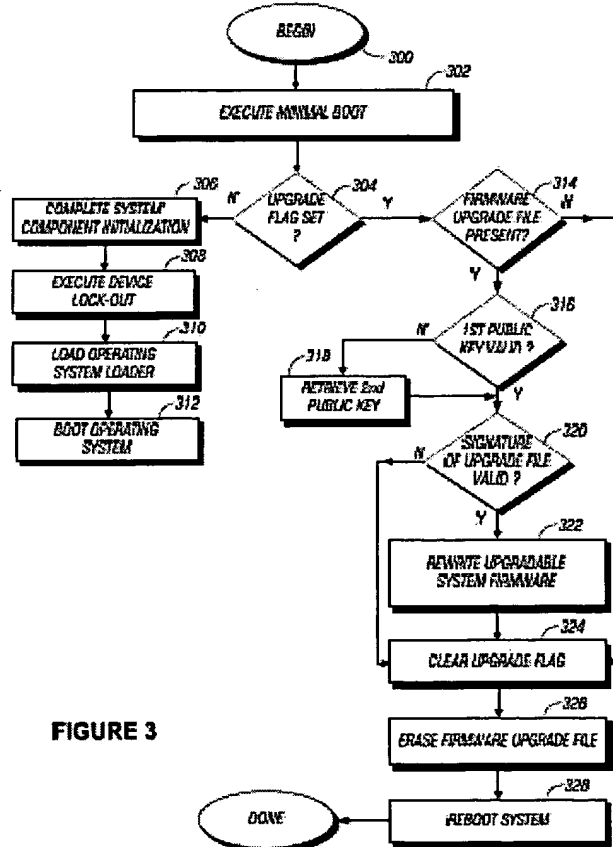


FIGURE 3



4. The method of claim 3, further comprising:

deleting the file (Fig. 3, 326; specification, page 13, lines 11-16); and  
clearing the flag (Fig. 3, 324, specification, page 10, lines 11-12).

27. An article comprising a medium storing instructions for enabling a processor-based system to:

identify (Fig. 3, 304) a firmware upgrade request by a firmware program  
(specification, page 9, lines 11-17);

retrieve a file signed with a private key (Fig. 3, 314; specification, page 9, lines 18-24);

validate the file with a public key (Fig. 3, 316; specification, page 9, lines 25-27);  
upgrade a portion of the firmware program by the firmware program (Fig. 3, 322;  
specification, page 10, lines 6-10);

lock a device storing the firmware program such that the public key is not readable  
(Fig. 3, 308; specification, page 8, line 25-page 9, line 2);

validate the public key (Fig. 3, 316; specification, page 9, lines 18-22); and  
retrieve a second public key from the firmware program if the public key is not valid  
(Fig. 3, 318; specification, page 9, lines 23-24).

32. A method comprising:

identifying (Fig. 3, 304) a firmware upgrade request by a firmware program  
(specification, page 9, lines 11-17);

retrieving a file signed with a private key (Fig. 3, 314; specification, page 9, lines 18-24);

validating the file with a public key (Fig. 3, 316; specification, page 9, lines 25-27);  
upgrading a portion of the firmware program by the firmware program (Fig. 3, 322;  
specification, page 10, lines 6-10);

locking a device storing the firmware program such that a second portion of the  
firmware program is not readable (Fig. 3, 308; specification, page 8, line 25-page 9, line 2);

validating the public key (Fig. 3, 316; specification, page 9, lines 18-22);

retrieving a second public key from the firmware program if the public key is not valid (Fig. 3, 318; specification, page 9, lines 23-24);

reading a flag, wherein the flag is located in a non-volatile medium (Fig. 1, 46) (Fig. 3, 304; specification, page 8, lines 19-21);

determining that the flag is set;

deleting the file (Fig. 3, 326; specification, page 13, lines 11-16); and

clearing the flag (Fig. 3, 324, specification, page 10, lines 11-12).

33. A method comprising:

providing a first portion (Fig. 2, 20) of a firmware code (Fig. 2, 200) which is not upgradable (specification, page 4, lines 16-22);

providing a second portion (Fig. 2, 20) of a firmware code (Fig. 2, 200) that is upgradable (specification, page 4, lines 23-24); and

providing information (Fig. 2, 14) for authenticating an upgrade of the second portion in the first portion (specification, page 4, lines 23-27).

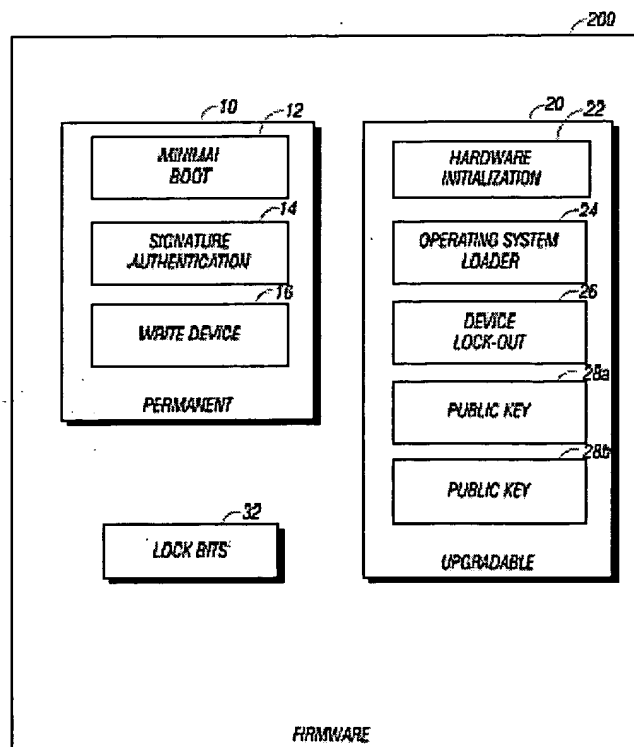


FIGURE 2

34. The method of claim 33 including locking the first portion to prevent reading said first portion (Fig. 3, 308; specification, page 8, line 25-page 9, line 2).

40. A processor-based system comprising:  
a processor (Fig. 1, 48); and  
a storage (Fig. 1, 40) storing a basic input/output system (Fig. 1, 200), said basic input/output system including a first portion (Fig. 1, 20) that is not upgradable and a second portion (Fig. 1, 10) that is upgradable, said first portion including an upgrade verification code (Fig. 2, 14) (specification, page 4, lines 23-27).

41. The system of claim 40 including a public key (Fig. 2, 28) in said first portion (Fig. 2, 20).

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Whether claims 33 and 40 are anticipated under 35 U.S.C. § 102(e) by Sudia (U.S. Patent Application Publication No. 2001/0050990).**
- B. Whether claims 1, 3, 5-7, 27, and 29 are unpatentable under 35 U.S.C. § 103(a) over Angelo (U.S. Patent No. 5,748,940) in view of Falik (U.S. Patent Application Publication No. 2002/0166061) and further in view of Sudia.**
- C. Whether claims 4 and 32 are unpatentable under 35 U.S.C. § 103(a) over Angelo in view of Falik, in view of Sudia, and further in view of Toft (U.S. Patent Application Publication No. 2002/0138592).**
- D. Whether claims 34-39 and 41-42 are unpatentable under 35 U.S.C. § 103(a) over Sudia in view of Falik.**

## **ARGUMENT**

**A. Are claims 33 and 40 anticipated under 35 U.S.C. § 102(e) by Sudia (U.S. Patent Application Publication No. 2001/0050990)?**

Claim 33 calls for providing information for authenticating an upgrade of a second portion of firmware code, in a first portion of firmware code. The first portion includes firmware code that is not upgradeable, while the second portion includes firmware code that is upgradeable.

The only cited reference to Sudia has nothing about where any authenticating information is stored. Therefore, as a matter of law, the reference is insufficient to support the rejection.

Three different things in Sudia have been cited in the office action. The Abstract has been carefully reviewed and there is nothing therein about where the authentication data might be stored relative to the two different memory areas. Paragraph 76 has been carefully reviewed and, while there is a discussion of different memory areas, there is nothing that indicates that the information for authenticating an upgrade of the second portion is contained in the non-upgradeable first portion. Also cited is paragraph 99 which simply has four words, none of which have anything to do with the claimed invention. Finally, paragraph 248 is cited which then talks about different areas of memory, but never indicates where any authentication information is stored.

Therefore a *prima facie* rejection of claim 33 is not made out.

For the same reason, claims 40-42 should be allowable.

**B. Are claims 1, 3, 5-7, 27, and 29 unpatentable under 35 U.S.C. § 103(a) over Angelo (U.S. Patent No. 5,748,940) in view of Falik (U.S. Patent Application Publication No. 2002/0166061) and further in view of Sudia?**

Claim 1 calls for retrieving a second key from a firmware program if the public key is not valid. The Examiner suggests that this is met by some backup key. But the backup key is not obtained if the public key is not valid.

For the same reason, claim 27 and its dependent claims should be in condition for allowance.

**C. Are claims 4 and 32 unpatentable under 35 U.S.C. § 103(a) over Angelo in view of Falik, in view of Sudia, and further in view of Toft (U.S. Patent Application Publication No. 2002/0138592)?**

For the reasons set forth in sections A and B, these rejections should also be reversed.


**D. Are claims 34-39 and 41-42 unpatentable under 35 U.S.C. § 103(a) over Sudia in view of Falik?**

On the same basis as set forth in section A above, claim 34 should be in condition for allowance. Claims 35-39 should, likewise, be allowable.

Applicant respectfully requests that each of the final rejections be reversed and that the claims subject to this Appeal be allowed to issue.

Respectfully submitted,

Date: October 25, 2006



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## **CLAIMS APPENDIX**

The claims on appeal are:

1. A method comprising:  
identifying a firmware upgrade request by a firmware program;  
retrieving a file signed with a private key;  
validating the file with a public key;  
upgrading a portion of the firmware program by the firmware program;  
locking a device storing the firmware program such that a second portion of the  
firmware program is not readable;  
validating the public key; and  
retrieving a second public key from the firmware program if the public key is not  
valid.
3. The method of claim 1, identifying a firmware upgrade request by a firmware  
program further comprising:  
reading a flag, wherein the flag is located in a non-volatile medium; and  
determining that the flag is set.
4. The method of claim 3, further comprising:  
deleting the file; and  
clearing the flag.
5. The method of claim 1, further comprising:  
determining that the file is not authentic; and  
locking the device.
6. The method of claim 1, further comprising:  
locking the device after upgrading a portion of the firmware program by the  
firmware program.

7. The method of claim 1, wherein the second portion of the firmware program is a public key.

27. An article comprising a medium storing instructions for enabling a processor-based system to:

- identify a firmware upgrade request by a firmware program;
- retrieve a file signed with a private key;
- validate the file with a public key;
- upgrade a portion of the firmware program by the firmware program;
- lock a device storing the firmware program such that the public key is not readable;
- validate the public key; and
- retrieve a second public key from the firmware program if the public key is not valid.

29. The article of claim 27, further storing instructions that enable the processor-based system to:

- determine that the file is not authentic; and
- lock the device.

32. A method comprising:

- identifying a firmware upgrade request by a firmware program;
- retrieving a file signed with a private key;
- validating the file with a public key;
- upgrading a portion of the firmware program by the firmware program;
- locking a device storing the firmware program such that a second portion of the firmware program is not readable;
- validating the public key;
- retrieving a second public key from the firmware program if the public key is not valid;
- reading a flag, wherein the flag is located in a non-volatile medium;



determining that the flag is set;  
deleting the file; and  
clearing the flag.

33. A method comprising:  
providing a first portion of a firmware code which is not upgradable;  
providing a second portion of a firmware code that is upgradable; and  
providing information for authenticating an upgrade of the second portion in the first portion.
34. The method of claim 33 including locking the first portion to prevent reading said first portion.
35. The method of claim 34 including providing a signature authentication in said first portion.
36. The method of claim 34 including providing two public keys.
37. The method of claim 36 including providing two identical public keys.
38. The method of claim 34 including providing instructions in said first portion to confirm the validity of a firmware upgrade file.
39. The method of claim 34 including determining whether an upgrade request is authentic and if said upgrade request is not authentic, locking the first portion against being written.

40. A processor-based system comprising:  
a processor; and  
a storage storing a basic input/output system, said basic input/output system including a first portion that is not upgradable and a second portion that is upgradable, said first portion including an upgrade verification code.

41. The system of claim 40 including a public key in said first portion.

42. The system of claim 40 including two public keys in said first portion.

## **EVIDENCE APPENDIX**

None.

**RELATED PROCEEDINGS APPENDIX**

None.